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Carl A. Ronald

Appl. No.: 09/648,861
Applicant(s): Samarth Sarthi, et al.
Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

TRANSMITTAL

To: Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing in the above-captioned application, please find the following:

- Appellants' Amended Brief Before the Board of Patent Appeals and Interferences (in triplicate)

Also enclosed is a return postcard. Please date stamp the postcard and return it to the address thereon in order to acknowledge receipt of the above-mentioned correspondence. The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to our Deposit Account No. 20-0888. A duplicate copy of this Transmittal letter is enclosed.

Respectfully submitted,

Carl A. Ronald

Carl A. Ronald
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Dated: 25 July 2007

Attorney for Applicants

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(1) *Real Party In Interest*

The real party in interest in this case is SCA Holdings, LLC, the assignee of the entire interest of the above-identified patent application.

(2) *Related Appeals and Interferences*

There are no known appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the instant case.

(3) *Status of Claims*

Claims 1 – 41 have been canceled. Claims 42 – 56 are pending in the application and claims 42 – 56 are rejected. Claims 42 - 56 are on appeal.

(4) *Status of Amendments*

No amendments have been filed since the issuance of the final Office action.

(5) *Summary of Claimed Subject Matter*

The subject matter of the claimed invention is, according to claim 42, a computer-implemented method of managing a process. As discussed beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application, this method requires first identifying activities **44** that comprise the process **42** the user wishes to manage or optimize. Then, key drivers **46** and the resources **48** needed for each of the activities are identified.

Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

As discussed beginning at page 4, line 35 and in FIG. 1, independent claim 50 recites a system that comprises a computer **10** having input **14** and ouput devices **18** that holds a computer program **20** in its memory. The computer program, when executed, enables the user to perform the method described beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

As disclosed beginning at page 5, line 9 and in FIG. 1, independent claim 53 teaches a computer-readable storage medium **22** that contains the programming **20** sufficient to enable a user to perform the method beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

(6) *Grounds of Rejection To Be Reviewed On Appeal*

Claims 42-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan, et. al. (U.S. Patent No. 5,799,286) in view of Ulwick (U.S. Patent No. 6,115,691)[1].

(7) *Argument*

The Office has failed to establish a prima facie case of obviousness with respect to claims 42-56.

As set forth in MPEP §§2142, 2143 (Eighth Edition incorporating Revision No. 5, August 2006) a *prima facie* case of obviousness exists when three basic criteria are met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. Importantly, the Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.

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[1] This patent cited by the Office did not issue until after the Applicant's patent application was filed and is not properly cited as prior art to the present application. The '691 Ulwick patent, however, appears to have been a continuation of an earlier patent issued to Ulwick on October 5, 1999, U.S. Pat. No. 5,963,910.

Absent making out such a *prima facie* case, the §103(a) rejection of claims 42 – 56, based on Morgan in view of Ulwick, must be reversed.

A. The Office has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

During prosecution, the Office conceded[2] that neither Morgan nor Ulwick explicitly discloses or suggests the desirability of making the modifications of the present invention. While the Supreme Court in the recent case of KSR, Int'l, Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007) rejected a rigid application of the Federal Circuit's "teaching, suggestion, or motivation" test, they nevertheless reiterated the need to *explicitly support* the conclusion that there was "an apparent reason to combine known elements in the fashion claimed by the patent at issue." KSR, at p. 14. The Deputy Commissioner for Patent Operations echoed this point to all Office staff in her May 3, 2007 guidance memorandum, concluding: "...in formulating a rejection under 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed."

In the present case, however, the only reasoning provided by the Office that supports the finding of suggestion or motivation in the art is found at page 3 of the Final Office Action dated May 4, 2006:

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[2] See page 11 of the Final Office Action dated May 4, 2006 ("...although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modification must be expressly articulated within the references themselves." [emphasis in original])

> It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating [sic] the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process.

It is respectfully submitted that the logic employed by the Office in the quoted language above leads to the untenable conclusion that <u>any</u> improvement to <u>any</u> process would be obvious to those skilled in the art. This is not a convincing line of reasoning because, if taken to its logical conclusion, it would invalidate nearly every process patent that currently exists.

Frankly, Applicants found it extremely difficult to understand the Office's argument in the present case because the combination of Morgan in view of Ulwick actually teaches away from the present application. While Morgan discloses a basic computer-implemented activity-based costing system and method, it does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and is thus not robust enough to handle a modern supply chain evaluation, for example. Ulwick, on the other hand, teaches analyzing customer survey data to find individual measurable parameters that reliably predict the desired outcomes specified by the customers. Importantly, Ulwick does not disclose any method of determining these measurable parameters. Accordingly, combining Morgan with Ulwick would actually lead a person of ordinary skill in the art in a different direction than the present application due to Ulwick's emphasis and reliance on survey data to divine its predictive metrics, rather than modeling and evaluating the process itself to generate specific measurable parameters that predict an improved or desired result. Thus, while optimizing a given process was certainly desirable at the time of the filing of the Applicant's

disclosure, the technique of managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost represents a novel approach that was neither indicated nor suggested to one of ordinary skill in the art at the time the present invention was made.

Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

As for this final element of the prima facie obviousness case, Morgan teaches the breaking down of a process into individual activities and representing the process as a sum of each those activities. Ulwick then discloses using survey data to divine measurable parameters that predict a successful outcome, but does not teach how that is done.

Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

Carl A. Ronald

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One Oxford Centre, 14th Floor
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Dated: 25 July 2007

Attorneys for Applicants

(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:
revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components
thereof.

50. A system, comprising:
a computer;
input and output devices in communication with said computer; and
a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:
allow a user to identify activities that comprise a process,
further allow said user to identify measurable drivers for each of the activities,
identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,
establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,
using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.

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Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

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Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

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Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

Carl A. Ronald

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(412) 394-7775

Dated: 25 July 2007

Attorneys for Applicants

(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:

revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components

thereof.

50. A system, comprising:

a computer;

input and output devices in communication with said computer; and

a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:

allow a user to identify activities that comprise a process,

further allow said user to identify measurable drivers for each of the activities,

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.

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Appl. No.: 09/648,861
Applicant(s): Samarth Sarthi, et al.
Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

APPELLANTS' AMENDED BRIEF BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

(1) *Real Party In Interest*

The real party in interest in this case is SCA Holdings, LLC, the assignee of the entire interest of the above-identified patent application.

(2) *Related Appeals and Interferences*

There are no known appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the instant case.

(3) *Status of Claims*

Claims 1 – 41 have been canceled. Claims 42 – 56 are pending in the application and claims 42 – 56 are rejected. Claims 42 - 56 are on appeal.

(4) *Status of Amendments*

No amendments have been filed since the issuance of the final Office action.

(5) *Summary of Claimed Subject Matter*

The subject matter of the claimed invention is, according to claim 42, a computer-implemented method of managing a process. As discussed beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application, this method requires first identifying activities **44** that comprise the process **42** the user wishes to manage or optimize. Then, key drivers **46** and the resources **48** needed for each of the activities are identified.

Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

As discussed beginning at page 4, line 35 and in FIG. 1, independent claim 50 recites a system that comprises a computer **10** having input **14** and ouput devices **18** that holds a computer program **20** in its memory. The computer program, when executed, enables the user to perform the method described beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

As disclosed beginning at page 5, line 9 and in FIG. 1, independent claim 53 teaches a computer-readable storage medium **22** that contains the programming **20** sufficient to enable a user to perform the method beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

(6) *Grounds of Rejection To Be Reviewed On Appeal*

Claims 42-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan, et. al. (U.S. Patent No. 5,799,286) in view of Ulwick (U.S. Patent No. 6,115,691)[1].

(7) *Argument*

The Office has failed to establish a prima facie case of obviousness with respect to claims 42-56.

As set forth in MPEP §§2142, 2143 (Eighth Edition incorporating Revision No. 5, August 2006) a *prima facie* case of obviousness exists when three basic criteria are met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. Importantly, the Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.

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[1] This patent cited by the Office did not issue until after the Applicant's patent application was filed and is not properly cited as prior art to the present application. The '691 Ulwick patent, however, appears to have been a continuation of an earlier patent issued to Ulwick on October 5, 1999, U.S. Pat. No. 5,963,910.

Absent making out such a *prima facie* case, the §103(a) rejection of claims 42 – 56, based on Morgan in view of Ulwick, must be reversed.

A. The Office has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

During prosecution, the Office conceded[2] that neither Morgan nor Ulwick explicitly discloses or suggests the desirability of making the modifications of the present invention. While the Supreme Court in the recent case of KSR, Int'l, Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007) rejected a rigid application of the Federal Circuit's "teaching, suggestion, or motivation" test, they nevertheless reiterated the need to *explicitly support* the conclusion that there was "an apparent reason to combine known elements in the fashion claimed by the patent at issue." KSR, at p. 14. The Deputy Commissioner for Patent Operations echoed this point to all Office staff in her May 3, 2007 guidance memorandum, concluding: "...in formulating a rejection under 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed."

In the present case, however, the only reasoning provided by the Office that supports the finding of suggestion or motivation in the art is found at page 3 of the Final Office Action dated May 4, 2006:

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[2] See page 11 of the Final Office Action dated May 4, 2006 ("...although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modification must be expressly articulated within the references themselves." [emphasis in original])

> It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating [sic] the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process.

It is respectfully submitted that the logic employed by the Office in the quoted language above leads to the untenable conclusion that <u>any</u> improvement to <u>any</u> process would be obvious to those skilled in the art. This is not a convincing line of reasoning because, if taken to its logical conclusion, it would invalidate nearly every process patent that currently exists.

Frankly, Applicants found it extremely difficult to understand the Office's argument in the present case because the combination of Morgan in view of Ulwick actually teaches away from the present application. While Morgan discloses a basic computer-implemented activity-based costing system and method, it does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and is thus not robust enough to handle a modern supply chain evaluation, for example. Ulwick, on the other hand, teaches analyzing customer survey data to find individual measurable parameters that reliably predict the desired outcomes specified by the customers. Importantly, Ulwick does not disclose any method of determining these measurable parameters. Accordingly, combining Morgan with Ulwick would actually lead a person of ordinary skill in the art in a different direction than the present application due to Ulwick's emphasis and reliance on survey data to divine its predictive metrics, rather than modeling and evaluating the process itself to generate specific measurable parameters that predict an improved or desired result. Thus, while optimizing a given process was certainly desirable at the time of the filing of the Applicant's

disclosure, the technique of managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost represents a novel approach that was neither indicated nor suggested to one of ordinary skill in the art at the time the present invention was made.

Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

As for this final element of the prima facie obviousness case, Morgan teaches the breaking down of a process into individual activities and representing the process as a sum of each those activities. Ulwick then discloses using survey data to divine measurable parameters that predict a successful outcome, but does not teach how that is done.

Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

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(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:

revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components

thereof.

50. A system, comprising:

a computer;

input and output devices in communication with said computer; and

a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:

allow a user to identify activities that comprise a process,

further allow said user to identify measurable drivers for each of the activities,

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.